CLAIMS

1. A fluidics station, comprising:

a housing constructed and arranged to accept one or more removable modules, wherein each of the one or more removable modules comprises:

a holder constructed and arranged to receive a probe array cartridge, wherein the probe array cartridge includes a chamber fluidically coupled to a plurality of apertures;

a transport mechanism constructed and arranged to reversibly transport the holder and the probe array cartridge between a first position and a second position;

one or more alignment pins constructed and arranged to engage one or more alignment features of the probe array cartridge, wherein the probe array cartridge is in the second position; and

a needle constructed and arranged to interface with each of the plurality of apertures.

2. The station of claim 1, wherein:

the housing accepts up to 4 of the modules.

3. The station of claim 1, wherein:

the holder receives the probe array in a specific orientation.

4. The station of claim 3, wherein:

the specific orientation is defined by an alignment tab associated with the probe array cartridge and an alignment groove associated with the holder.

5. The station of claim 1, wherein:

the chamber houses a biological probe array enabled to detect biological molecules.

6. The station of claim 1, wherein:

the transport mechanism transports the holder and probe array cartridge along a linear axis.

7. The station of claim 1, wherein:

the one or more alignment pins precisely position the probe array cartridge.

8. The station of claim 1, wherein:

the needle introduces and removes fluid from the probe array cartridge.

9. The station of claim 1, wherein:

at least two needles interfacing with the plurality of apertures are further constructed and arranged for fluid detection.

10. The station of claim 9, wherein:

the fluid detection includes conductivity measurements.

11. The station of claim 9, wherein:

the fluid detection includes the presence or absence of a fluid.

12. The station of claim 9, wherein:

the fluid detection includes the identity of a fluid.

13. The station of claim 1, wherein each module further comprises:

a vial holder constructed and arranged to hold a plurality of vials; and

a leaf spring mechanism associated with each of the plurality of vials constructed and arranged to reversibly position a vial needle in the bottom of the vial.

14. The station of claim 13, wherein:

each of the plurality of vials holds a fluid.

15. The station of claim 14, wherein:

the vial needle removes the fluid from the vial for transfer to the probe array cartridge.

16. A method for fluid transfer, comprising the acts of:

accepting one or more removable modules, wherein each of the one or more removable modules performs the acts of:

receiving a probe array cartridge, wherein the probe array cartridge includes a chamber fluidically coupled to a plurality of apertures;

reversibly transporting the holder and the probe array cartridge between a first position and a second position;

engaging one or more alignment features of the probe array cartridge, wherein the probe array cartridge is in the second position; and

interfacing with each of the plurality of apertures.

17. The method of claim 16, wherein:

the housing accepts up to 4 of the modules.

18. The method of claim 16, wherein:

the holder receives the probe array in a specific orientation.

19. The method of claim 18, wherein:

the specific orientation is defined by an alignment tab associated with the probe array cartridge and an alignment groove associated with the holder.

20. The method of claim 16, wherein:

the chamber houses a biological probe array enabled to detect biological molecules.

21. The method of claim 16, wherein:

the act of reversibly transporting includes transporting along a linear axis.

22. The method of claim 16, wherein each removable module further performs the acts of:

detecting fluid via the interface with at least two of the plurality of apertures.

23. The method of claim 22, wherein:

the act of detecting fluid includes conductivity measurements.

24. The method of claim 22, wherein:

the act of detecting fluid includes detecting the presence or absence of a fluid.

25. The method of claim 22, wherein:

the act of detecting fluid includes detecting the identity of a fluid.

26. The method of claim 16, wherein each removable module further performs the acts of:

holding a plurality of vials; and

reversibly positioning a vial needle in the bottom of each vial.

27. The method of claim 26, wherein:

each of the plurality of vials holds a fluid.

28. The method of claim 27, further comprising the act of:

removing the fluid from the vial for transfer to the probe array cartridge.

29. A fluidics module, comprising:

a holder constructed and arranged to receive a probe array cartridge, wherein the probe array cartridge includes a chamber fluidically coupled to a plurality of apertures;

a transport mechanism constructed and arranged to reversibly transport the holder and the probe array cartridge between a first position and a second position;

one or more alignment pins constructed and arranged to engage one or more alignment features of the probe array cartridge, wherein the probe array cartridge is in the second position; and

a needle constructed and arranged to interface with each of the plurality of apertures.

30. The module of claim 29, wherein:

the fluidics module is further constructed and arranged to interface with a housing, wherein the housing accepts up to 4 of the fluidics modules.

31. The module of claim 29, wherein:

the holder receives the probe array in a specific orientation.

32. The module of claim 31, wherein:

the specific orientation is defined by an alignment tab associated with the probe array cartridge and an alignment groove associated with the holder.

33. The module of claim 29, wherein:

the chamber houses a biological probe array enabled to detect biological molecules.

34. The module of claim 29, wherein:

the transport mechanism transports the holder and probe array cartridge along a linear axis.

35. The module of claim 29, wherein:

the one or more alignment pins precisely position the probe array cartridge.

36. The module of claim 29, wherein:

the needle introduces and removes fluid from the probe array cartridge.

37. The module of claim 29, wherein:

at least two needles interfacing with the plurality of apertures are further constructed and arranged for fluid detection.

38. The module of claim 37, wherein:

the fluid detection includes conductivity measurements.

39. The module of claim 37, wherein:

the fluid detection includes the presence or absence of a fluid.

40. The module of claim 37, wherein:

the fluid detection includes the identity of a fluid.

41. The module of claim 29, wherein each module further comprises:

a vial holder constructed and arranged to hold a plurality of vials; and

a leaf spring mechanism associated with each of the plurality of vials constructed and arranged to reversibly position a vial needle in the bottom of the vial.

42. The module of claim 41, wherein:

each of the plurality of vials holds a fluid.

43. The module of claim 42, wherein:

the vial needle removes the fluid from the vial for transfer to the probe array cartridge.

44. A computer system having system memory with control software stored thereon, wherein the control software performs methods of instrument control comprising the acts of:

receiving a probe array cartridge, wherein the probe array cartridge includes a chamber fluidically coupled to a plurality of apertures;

reversibly transporting the holder and probe array cartridge between a first position and a second position, wherein the act of reversibly transporting includes transporting along a linear axis;

engaging one or more alignment features of the probe array cartridge, wherein the probe array cartridge is in the second position; and

interfacing with each of the plurality of apertures.